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## (54) SURFACTANT BASED ON MICROORGANISM CULTURE SOLUTION AND CLEANSING SOLUTION CONTAINING THE SAME

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a surfactant or cleansing agent having a strong cleansing power based on microorganism and enzyme action without using chemicals, and a wide range in treated products to be cleansed and easy in handling.

SOLUTION: This microorganism culture solution-containing cleansing agent in which (a) an aerobic microorganism group, (b) an anaerobic microorganism group, (c) at least one kind of Basidiomycetes belonging to Pleurotus osreatus family and (d) photosynthetic bacteria live together contains the enzyme derived from metabolites of the microorganisms thereof and carbon splitting enzyme. The carrier containing an active ingredient of the culture solution and based on micronized carbonaceous matter is used as the cleansing agent.

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(54)【発明の名称】　微生物培溶液に基づく界面活性剤及び上記界面活性剤を含む洗浄液

(57)【要約】
【課題】　化学薬品を使用せずに微生物及び酵素の作用に基づいた洗浄力が強く、対象となる被処理物の範囲の広く、取り扱いが容易である界面活性剤や洗浄剤を提供する
【解決手段】　（ａ）好気性微生物群、（ｂ）嫌気性微生物群、（ｃ）少なくとも１種のヒラタケ科に属する担子菌類、（ｄ）光合成菌類とが共生し、かつこれらの微生物群代謝物由来の酵素及び炭素分解酵素を含むことを特徴とする微生物培溶液を含む洗浄剤またはこれを前記培養液の活性成分を含む微細化された炭素質に基づく担体を洗浄剤として使用する。

【特許請求の範囲】
【請求項１】　（ａ）好気性微生物群、（ｂ）嫌気性微生物群、（ｃ）少なくとも１種のヒラタケ科に属する担子菌類、（ｄ）光合成菌類とが共生し、かつこれらの微生物群代謝物由来の酵素及び炭素分解酵素を含むことを特徴とする微生物培溶液を含む界面活性剤。
【請求項２】　請求項１に記載の界面活性剤を水で希釈して得られた洗浄剤。
【請求項３】　微細化された炭素質を（ａ）好気性微生物群、（ｂ）嫌気性微生物群、（ｃ）少なくとも１種のヒラタケ科に属する担子菌類、（ｄ）光合成菌類とが共生し、かつこれらの微生物群代謝物由来の酵素及び炭素分解酵素を含むことを特徴とする微生物培溶液に浸漬して前記炭素質をに溶解し、乾燥して得られた前記微生物培養液中の活性成分を含む担体を含む粉末洗浄剤。
【請求項４】　請求項３に記載の粉末洗浄剤と請求項２に記載の洗浄剤とを含むスラリー状の洗浄剤。
【請求項５】　請求項３に記載の粉末洗浄剤を水又は水性媒体で希釈して得られたスラリー状洗浄剤。
【請求項６】　金属表面処理に用いる請求項１ないし請求項５のいずれか一つに記載の洗浄剤。
【請求項７】　剥離・除去対象が赤錆又は塗料である請求項１ないし請求項６のいずれか一つに記載の洗浄剤。
【発明の詳細な説明】
【０００１】
【産業上の利用分野】本発明は、微生物培溶液に基づく界面活性剤及び上記界面活性剤を水で希釈して得られた洗浄剤に関する。
【０００２】
【従来の技術】従来、種々の洗浄の目的で、非イオン系の界面活性剤、アニオン系界面活性剤やカチオン系の界面活性剤や、酸、アルカリ、酸化剤、還元剤、石油系の溶剤等の各種化学薬品が使用されてきた。
【０００３】石鹸等に代表される界面活性剤は、刺激が少なく取り扱いが容易であるが、洗浄力の点で劣り、各種分野に使用可能なものではなく、また各種化学薬品を使用する場合、価格が高価であったり、引火性、皮膚に対する刺激、揮発して有毒ガスが発生する等の取り扱いの点で注意を有するものが多く、また水ガラスとグラファイトをから得られた被膜の剥離等に対しては洗浄力に乏しく、あるいは洗浄力の強い薬剤では対象となる被洗浄物に悪影響を及ぼす等の種々の欠点を有していた。更に、洗浄剤は被処理物の材質等により著しく制限されており、汎用性の点で問題があった。
【０００４】
【発明が解決しようとする課題】従って、このような化学薬品に代わる洗浄力が強く、対象となる被処理物の範囲の広く、取り扱いが容易である界面活性剤や洗浄剤に対する要求があった。従って、本発明の課題は、化学薬品を使用せずに微生物及び酵素の作用に基づいた洗浄力が強く、対象となる被処理物の範囲の広く、取り扱いが容易である界面活性剤や洗浄剤を提供することである。
【０００５】
【課題を解決するための手段】本発明者は、上記目的に鑑み鋭意検討した結果、性質の異なる微生物群とこれらの代謝物である酵素を含有する微生物培養液が特殊な界面活性剤の働きを示すこと、おおびこの培養液の水で希釈した希釈液が洗浄剤として良好な作用を示すことを見出し本発明を完成するに至った。
【０００６】即ち、本発明の第一の態様は、（ａ）好気性微生物群、（ｂ）嫌気性微生物群、（ｃ）少なくとも１種のヒラタケ科に属する担子菌類、（ｄ）光合成菌類とが共生し、かつこれらの微生物群代謝物由来の酵素及び炭素分解酵素を含むことを特徴とする微生物培溶液（以下、ＯＭＥと言う）をを含むことを特徴とする微生物培溶液を含む界面活性剤及びこれを水で希釈して得られた洗浄剤（以下、ＯＭＥ洗浄剤と言う）に関する。この洗浄剤を使用すると、全てのｐＨ範囲で使用可能であり、各種の対象となる被処理物に適用が可能であり、有害物質の発生が見られず、従来洗浄が不可能であった汚れまで洗浄可能な界面活性や洗浄剤が得られる。
【０００７】本発明の第２の態様は、微細化された炭素質をＯＭＥ又はその希釈液に浸漬して前記炭素質をに溶解し、乾燥して得られた前記微生物培養液中の活性成分を含む担体（以下、ＤＣＰと言う）を含む粉末洗浄剤（以下、ＤＣＰ洗浄剤と言う）に関する。また、このＤＣＰ洗浄剤は、水又は水性媒体特に前記ＯＭＥ洗浄剤と混合したスラリー状の洗浄剤として、使用することができる（以下、ＤＣＰスラリー洗浄剤と言う）。これらのＤＣＰ洗浄剤およびＤＣＰスラリー洗浄剤も、ＯＭＥ洗浄剤と同様に全てのｐＨ範囲で使用可能であり、各種の対象となる被処理物に適用が可能であり、有害物質の発生が見られず、従来洗浄が不可能であった汚れまで洗浄可能な界面活性や洗浄剤が得られる。また、固形のＤＣＰ作用により洗浄表面に強固に付着した汚れ、例えば塗料や赤錆等を剥離することが可能である。従って、本発明における洗浄剤とは、剥離剤の意味も包含する。
【０００８】
【発明の実施の形態】以下、本発明を詳細に説明する。本発明において界面活性剤に使用されるＯＭＥとは、特定の培養基として本発明者が先に出願した生物活性剤中で好気性微生物および特定の担子菌類とを培養し、次いでこの培養液中で嫌気性微生物を培養することによって得られた微生物群とその代謝物である酵素との混合液に植物由来の炭素源を添加して炭素分解酵素を産生させた異なる微生物群が共生し、これらの代謝物としての酵素と炭素分解酵素とを含む溶液のことを言い。かかる培養液の製造方法及び特徴等は、本願出願人が出願した国際特許出願ＰＣＴ／ＪＰ９９／０２３４６号明細書に詳細に記載されている（出願日１９９９年５月６日、未公

開）。また、OMEは、オリエントグリーン株式会社よりダッシュアミノンAZ1000MKIIの名称で販売されている。本発明においてOMEを300～3000倍、好ましくは500～2000倍に希釈して洗浄剤として使用することができる。

【0009】このOMEは、前記国際特許出願で明らかにされている通りマウスの経口毒性試験で無害であることが証明されており、種々の対象物に適用可能である。また、以下に挙げるような特徴を有している。

【0010】炭素質の溶解作用を有している。OME活性成分中には、炭素質分解酵素が含まれているためと仮定できる。処理対象物により選択的に下記の微生物・酵素反応を起こす

I．　加水分解反応

a．　RCO－NHR’＋$H_2O$→RCOOH＋R’$NH_2$

b．　RCO－OR’＋$H_2O$→RCOOH＋4R’OH

c．　RCO－SR’＋$H_2O$→RCOOH＋4R’SH

d．　R－CH－OR’＋$H_2O$→RH＋HO－CH－OR’

（式中、R、R’は各々独立して置換されてもよい炭化水素基を表す。）

II．　開裂反応

a．　RCOOH→RH＋$CO_2$

b．　HOCRH－CR’H－OH→R$CH_2$OH＋R’CHO

（式中、R、R’は各々独立して置換されてもよい炭化水素基を表す。）

III．　酸化還元反応

a．　$AH_2$＋B→A＋$BH_2$

b．　$AH_2$＋$O_2$→A＋$H_2O_2$

IV．　脱水素反応

a．　CRR’H－CR″H－OH→RR’C＝CR″H＋$H_2O$

b．　CRR’H－CR″H－$NH_2$→RR’C＝CR″H＋$NH_2$

（式中、R、R’’、R”は各々独立して置換されてもよい炭化水素基を表す。）

V．　脱水素ハロゲン化反応

a．　RCX－CR’H→RC＝CR’＋HX

（式中、Rは置換されてもよい炭化水素基を表し、そしてXはハロゲン原子を表す。）

VI．　置換反応

a．　RX$CH_2$＋$H_2O$→R$CH_2$OH＋HX

b．　RX$CH_2$＋　$HS^-$　→　R$CH_2$SH＋$X^-$

（式中、Rは置換されてもよい炭化水素基を表し、そしてXはハロゲン原子を表す。）

フェノール性OHおよびハロゲンの脱離反応

【0011】重金属除去作用

OMEは、亜鉛、鉛、錫、ニッケル、クロム、銅、コバルト、マンガン、水銀、カドミウム、半導体中のドロス成分等の重金属を除去する作用がある。どのような機構で重金属を除去するのか明らかではないが、本発明者によるめっき廃液や半導体廃液の処理実験の結果これらの重金属類は実質的に除去可能であることがわかった。

有機化合物の分解作用

上記の脱ハロゲン作用により、有機ハロゲン化合物、例えばダイオキシン類、ポリ塩化ビフェニル類、クロロベンゼン等のハロゲン置換された芳香族有機化合物やテトラクロロエチレン、トリクロロエチレン、ジクロロメタン、四塩化炭素、1，2－ジクロロエチレン、1，1－ジクロロエチレン、シス－1，2－ジクロロエチレン、1，1，1－トリクロロエタン、1，1，2－トリクロロエタン、1，3－ジクロロプロペン等の脂肪族有機ハロゲン化合物の分解が可能である他、アゾ染料等の色素の分解、メチルメルカプタン、カプタン類、インドール、スカトール等の有機化合物の分解作用を有している。

【0012】無機化合物の分解作用

窒素の還元：OME中に含まれる嫌気性及び通性嫌気性化学合成従属栄養菌は、嫌気的呼吸か発酵のどちらかのしくみを持つ。嫌気的呼吸は、好気的代謝（好気的呼吸）と本質的に同じ生化学経路であり、電子伝達鎖の最終電子受容体が酸素の代わりに、硝酸（$NO_3^-$）、硫酸（$SO_4^{2-}$）、フマル酸又はトリメチルアミンオキシドである。$NO_3^-$、$SO_4^{2-}$の場合、還元産物お最終電子受容体として働く。$NO_3^-$の還元の際、脱窒菌により、$NO_3^-$は$NO_2^-$となり、更に還元されて$N_2O$となり、最終的には$N_2$ガスを生産する、OM及びOME中の脱窒能を持つ代表的細菌は、Rhodobacter、Bacillus、Cytophaga等である。

【0013】アンモニアの分解OM又はOME中で下記反応によりアンモニアは無臭となる。

$2NH_3＋H_2O＋CO_2$→$(NH_4)_2CO_3$

$2(NH_4OH)＋H_2O＋CO_2$　→$(NH_4)_2CO_3＋2H_2O$

アンモニア水の場合も、炭酸アンモニウムを呈し、酸素の供給が少ない場合はアンモニウムイオン（$NH_4^-$）は、消化細菌等により亜硝酸から硝酸へと変化し無臭となる。

$2NH_3＋2O_2$→$2NHO＋H_2O$

$2NHO_2＋O_2$→$2NHO_3$

【0014】硫化水素（$H_2S$）の分解

$2H_2S＋O_2$→$2NHO_2＋H_2O$

メチルメルカプタン（$CH_3SH$）の分解

$2CH_3SH＋O_2$→$2CH_3OH＋S$

$2CH_3OH+2O_2 \rightarrow 2CO_2+H_2O$

脱塩作用

海水中の塩化ナトリウムを実質的に除去することが可能であることがわかった。ＯＭＥは、全ｐＨ範囲にわたって適用可能であり、ｐＨを中性に戻す作用がある。ＯＭＥは無害である。

【００１５】このような効果を奏するのはＯＭＥ中に存在する炭素分解酵素を始めとする各種酵素や微生物の相互作用により対象となる汚れを分解し剥離するためであると考えられる。従って、除去しようとする汚れに対してＯＭＥ中の活性成分が被処理物が分解することによって界面活性効果が得られると考えられ、分解した汚れは容易に除去可能である。

【００１６】例えば、ガスこんろ、換気扇等を始めとするキッチンの汚れ、アスファルト等の容易に剥離不能であった建材の汚れ、鋼板やアルミ板等の金属板をコーティングする前の前処理洗浄や、各種電子部品の洗浄等に使用することが可能である。更に、強固に付着した塗料や金属表面に付着した赤錆等の剥離・除去も可能であった。特に驚くべきことに、水ガラスとグラファイトを焼成して塗膜を塗布した電子部品から塗膜を瞬間的に剥離することが可能であった。かかる洗浄剤の適用方法は、対象となる汚れが付着した被処理物に本発明における洗浄剤を塗布または噴霧するかあるいは、上記被処理物を洗浄剤中に浸漬した後に、布等でかるく拭くだけで充分である。

【００１７】このような効果を奏するのはＯＭＥ中に存在する炭素分解酵素を始めとする各種酵素や微生物の相互作用により対象となる汚れを分解し剥離するためであると考えられ、従来の溶剤や界面活性剤とはまったく異なる機構による分解である。

【００１８】本発明の第二の態様は、ＤＣＰ洗浄剤に関する。本発明のＤＣＰ洗浄剤において使用されるＤＣＰも第一の態様と同様にして、の製造方法及び特徴等は、本願出願人が出願した国際特許出願ＰＣＴ／ＪＰ９９／０２３４６号明細書に詳細に記載されている（出願日１９９９年５月６日、未公開）。ＤＣＰもまた、ＯＭＥと同様の作用を有している。本発明においてＯＭＥ中に微細化された炭素質を浸漬させて、炭素質を溶解させるとともにこのような優れた特性を有するＯＭＥ活性成分を炭素質中に導入してＤＣＰとするが、この際に使用されるされる微細化した炭素質とは、グラファイト系炭素および無定形炭素の微粉末を意味し、一般に低温で、好ましくは約４００℃以下の低温で炭素源を燃焼して得られたものであり、本発明の目的を達成するものであればその出所は限定されるものではない。

【００１９】ＤＣＰの炭素源としては、木質、その破砕物（木屑）および草木等のセルロース系カーボン、炭水化物を含有する植物等に由来する植物系カーボン、蛋白質を含有する動植物に由来する蛋白質系カーボン、石油を原料とする石油系カーボンが挙げられ、これらのカーボンを単独または組み合わせて使用することができる。いわゆる生ごみとして廃棄されるこれらの各種由来のカーボンを使用するのが特に好ましい。上記微細化した炭素質とＯＭＥ（またはその希釈液）とを混合・撹拌するに当たって、上記炭素質とＯＭＥ希釈液との割合は、本発明の目的・効果を損なわない限り特に限定されるものではない。また、混合の手段も、炭素質に微生物水溶液を導入しても、微生物水溶液中に炭素質を導入してもよい。好ましくは、ＯＭＥ水溶液中に撹拌下、徐々に炭素質を導入する。このようにして、微細化された炭素質と菌群の水溶液とを混合・撹拌すると、炭素質が徐々に分解し、撹拌下に１～４週間程度保持すると炭素質がどろどろにとけたケーキ状またはスラッジ状の担体となり、撹拌の負荷が軽微なものとなる。なお、このケーキ状またはスラッジ状担体の水分を調整してそのまま使用することもできるが、例えば天日あるいは風乾により乾燥させた後に所望の水分量を追加することも可能である

【００２０】ＤＣＰはそのまま、あるいは他の従来公知の洗浄剤又は剥離剤例えば一般に市販されているクレンザー等と混合して固形の洗浄剤として使用することができる。あるいは、ＤＣＰを水又は水性媒体と混合して、スラリー状にして使用することも可能である。その際に使用するのは水であってもよく、ＤＣＰの効果を阻害しない成分が含まれている水性媒体であってもよい。好ましくは上記ＯＭＥ溶液、又は各種微生物を含有する溶液（例えば、上記本発明者による国際出願に記載された（ａ）好気性微生物群、（ｂ）嫌気性微生物群、（ｃ）少なくとも１種のヒラタケ科に属する担子菌類とが共生し、かつこれらの代謝物由来の酵素を含むことを特徴とする微生物培溶液（ＯＭと言う：オリエントグリーン株式会社よりダッシュアミノンＭＫ１の名称で販売）であり、特に上記ＯＭＥを含む洗浄剤で希釈したスラリーが好ましい。この際の水の添加量は、処理すべきき汚れの種類によって適宜選択されて本発明によるＤＣＰ洗浄剤とする。

【００２１】このＤＣＰ洗浄剤を、赤錆の付着したフライパン等の鉄板、塗料が付着した板（金属板、木材等）に塗布し軽くスポンジ等で拭ったところ、瞬時にしてこれらの汚れが剥離することを見出した。また、ＯＭＥ洗浄剤と同様に、水ガラスとグラファイトを焼成して塗膜を塗布した電子部品にＤＣＰ粉末洗浄剤をＯＭＥ洗浄剤と混合してスラリー化した洗浄剤を塗布してスポンジや布等でかくる拭うだけで塗膜を瞬間的に剥離することが可能であった。

【００２２】ＤＣＰ洗浄剤が効果を奏するのはＯＭＥ中に存在する炭素分解酵素を始めとする各種酵素や微生物の相互作用により対象となる汚れを分解し剥離するためであると考えられ、従来の溶剤や界面活性剤とはまったく異なる機構による分解によるものである。また、クレ

ンザー等と同様に微細化した炭素質状態のＤＣＰによる研磨作用も有している。ＤＣそのものは比較的に軟質であり洗浄面を傷つけることもない。

【００２３】

【発明の効果】以上説明した通り、本発明は次の優れた効果を奏する。このＯＭＥ洗浄剤又はＤＣＰ洗浄剤を使用すると、全てのｐＨ範囲で使用可能であり、各種の対象となる被処理物に適用が可能であり、有害物質の発生が見られず、従来洗浄剤に使用では簡単に剥離することが困難であった不可能であった汚れまで洗浄可能な界面活性や洗浄剤が得られる。

* NOTICES *



1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

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CLAIMS

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[Claim(s)]
[Claim 1] (a) an aerobic-bacteria group, (b) anaerobiosis microbial population, and (c) -- the surfactant containing microorganism ****** characterized by for Basidiomycetes and (d) photosynthesis fungus belonging to at least one sort of departments of an oyster mushroom living together, and including the enzyme and carbon dialytic ferment of these microbial population metabolite origins.
[Claim 2] The cleaning agent which diluted the surfactant according to claim 1 with water, and was obtained.
[Claim 3] The carbonaceous made detailed (a) aerobic-bacteria group, (b) anaerobiosis microbial population, (c) Basidiomycetes and (d) photosynthesis fungus belonging to at least one sort of departments of an oyster mushroom live together. and the powder cleaning agent containing the support containing the active ingredient in said microorganism culture medium obtained by being immersed in microorganism ****** characterized by including the enzyme and carbon dialytic ferment of these microbial population metabolite origins, boiling said carbonaceous, dissolving, and drying.
[Claim 4] The cleaning agent of the shape of a slurry containing a powder cleaning agent and a cleaning agent according to claim 2 according to claim 3.
[Claim 5] The slurry-like cleaning agent which diluted the powder cleaning agent according to claim 3 with water or an aquosity medium, and was obtained.
[Claim 6] The cleaning agent of any one publication of claim 1 used for metal finishing thru/or claim 5.
[Claim 7] The cleaning agent of any one publication of claim 1 whose candidate for exfoliation / removal is rust or a coating thru/or claim 6.

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[Translation done.]

## DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the cleaning agent which diluted the surfactant and the above-mentioned surfactant based on microorganism ****** with water, and was obtained.
[0002]
[Description of the Prior Art] Conventionally, various chemicals, such as a surface active agent of a non-ion system, an anion system surface active agent and the surface active agent of a cation system, and an acid, alkali, an oxidizer, a reducing agent, a solvent of a petroleum system, have been used for the purpose of various washing.
[0003] Although there are few stimuli and the surfactant represented by soap etc. is easy handling Are inferior in respect of a detergency. What [ not ] is usable in various fields but when various chemicals are used again, There is much what has cautions in respect of handling, like as opposed to inflammability and the skin in that a price is expensive **** stimulates, volatilize, and a toxic gas occurs. moreover, water glass and graphite -- since -- to exfoliation of the obtained coat etc., it had various faults, such as having a bad influence on the target washed object, with drugs with a detergency it is deficient in a detergency or strong to it. Furthermore, the cleaning agent is remarkably restricted by the quality of the material of a processed material etc., and had a problem in respect of versatility.
[0004]
[Problem(s) to be Solved by the Invention] Therefore, the detergency replaced with such chemicals was strong, the range of the target processed material was wide, and there was a demand to a surfactant and a cleaning agent with easy handling. Therefore, the technical problem of this invention is a microorganism and the detergency based on an operation of an enzyme being strong, and the range of the target processed material being wide, and offering a surfactant and a cleaning agent with easy handling, without using chemicals.
[0005]
[Means for Solving the Problem] this invention person came to complete header this invention for that work of a surfactant with the special microorganism culture medium containing the microbial population from which a property differs, and the enzyme which are these metabolite is shown, and the diluent which wore and was diluted with the water of this culture medium showing an operation good as a cleaning agent, as a result of inquiring wholeheartedly in view of the above-mentioned purpose.
[0006] The first mode of this invention Namely, (a) aerobic-bacteria group, (b) anaerobiosis microbial population, (c) Basidiomycetes and (d) photosynthesis fungus belonging to at least one sort of departments of an oyster mushroom live together. And it is related with the cleaning agent (henceforth an OME cleaning agent) which diluted with water the surfactant and this containing microorganism ****** characterized by including microorganism ****** (henceforth OME) ** characterized by including the enzyme and carbon dialytic ferment of these microbial population metabolite origins, and was obtained. If this cleaning agent is used, it is [ no ] usable in the pH range, and it can apply to the processed material set as various kinds of objects, and generating of harmful matter will be seen, but the surface activity and cleaning agent which were not able to be washed conventionally and which even dirt can wash will be obtained.
[0007] the 2nd mode of this invention is immersed in OME or its diluent in the carbonaceous made detailed, boils said carbonaceous and is related with the powder cleaning agent (henceforth a DCP cleaning agent) containing the support (henceforth DCP) containing the active ingredient in said microorganism culture medium obtained by dissolving and drying. Moreover, this DCP cleaning agent can be used as a slurry-like cleaning agent mixed with water or the aquosity medium, especially said OME cleaning agent (henceforth a DCP slurry cleaning agent). These DCP cleaning agents and a DCP slurry cleaning agent as well as an OME cleaning agent are usable in all the pH range, it can apply to the processed material set as various kinds of objects, and generating of harmful matter is not seen, but the surface activity and cleaning agent which were not able to be washed conventionally and which even dirt can wash are obtained. Moreover, it is possible to exfoliate the dirt which adhered to the washing front face firmly according to a solid DCP operation, for example, a coating, rust, etc. Therefore, the semantics of a remover is also included with the cleaning agent in this invention.
[0008]
[Embodiment of the Invention] Hereafter, this invention is explained to a detail. In OME used for a surfactant in this invention Aerobic bacteria and specific Basidiomycetes are cultivated in the bioactive agent for which this invention person applied previously as a specific culture medium. Subsequently, different microbial population which the carbon source of the vegetable origin was added [ microbial population ] into the mixed liquor of the microbial population obtained by cultivating an anaerobic microorganism in this culture medium and the enzyme which is that metabolite, and made it produce a carbon dialytic ferment lives together. The thing of the solution containing the enzyme and carbon dialytic ferment as these metabolite is said, and it is **. The manufacture approach of this culture medium, the description, etc. are indicated by the international patent application PCT/JP 99/No. 02346 specification for which the applicant for this patent applied at the detail (un-opening [ filing-date-of-application May 6, 1999, ] to the public). Moreover, OME is sold by ORIENT Green, Inc. under the name of dash friend non AZ1000MKII. In this invention, 300 to 3000 times, OME can be diluted 500 to 2000 times preferably, and can be used as a cleaning agent.
[0009] The harmless thing is proved by the oral toxicity trial of a mouse as clarified by said international patent application, and this OME can be applied to various objects. Moreover, it has the description which is listed to below.
[0010] It has the solvent action of carbonaceous. Because the carbonaceous dialytic ferment is contained can be assumed in an OME active ingredient. I. which causes the following microorganism and enzyme reaction alternatively with a processing object Hydrolysis reaction a. RCO-NHR'+H2 O->RCOOH+R'NH2b. RCO-OR'+H2O->RCOOH+4R'OHc. RCO-SR'+H2O->RCOOH+4R'SHd. R-CH-OR'+H2O->RH+HO-CH-OR' (R and R' expresses among a formula the hydrocarbon group which may be permuted respectively independently.)

II. Cleavage reaction a. RCOOH->RH+CO2b. HOCRH-CR'H-OH->RCH2 OH+R'CHO (R and R' expresses among a formula the hydrocarbon group which may be permuted respectively independently.)
III. Oxidation reduction reaction a. AH2+B->A+BH2b. AH2+O2->A+H2O2IV. Dehydrogenation a. CRR'H-CR"H-OH->RR'C=CR"H+H2Ob. CRR'H-CR"H-NH2 ->RR'C=CR"H+NH2 (R" expresses among a formula R, R', and the hydrocarbon group that may be permuted respectively independently.)
V. Dehydrogenation halogenation reaction a. RCX-CR'H->RC=CR'+HX (R expresses among a formula the hydrocarbon group which may be permuted, and X expresses a halogen atom.)
VI. Substitution reaction a. RXCH2+H2O->RCH2OH+HXb. RXCH2+ HS- -> RCH2 SH+X - (R expresses among a formula the hydrocarbon group which may be permuted, and X expresses a halogen atom.)
The phenol nature OH and the elimination reaction of a halogen [0011] The heavy-metal removal operation OME has the operation which removes heavy metal, such as a dross component in zinc, lead, tin, nickel, chromium, copper, cobalt, manganese, mercury, cadmium, and a semi-conductor. Although it was not clear in by what kind of device heavy metal is removed, such heavy metal was understood that it can remove substantially as a result of the processing experiment of the plating waste fluid by this invention person, and semi-conductor waste fluid.
According to a dehalogenation operation of an organic compound of the disintegration above, an organic halogenated compound, For example, aromatic series organic compounds by which halogenation was carried out, such as dioxin, polychlorinated biphenyl, and a chlorobenzene, and tetrachloroethylene, A trichloroethylene, dichloromethane, a carbon tetrachloride, 1,2-dichloroethylene, 1,1-dichloroethylene, cis--1,2-dichloroethylene, 1,1,1-trichloroethane, Disassembly of aliphatic series organic halogenated compounds, such as 1,1,2-trichloroethane and 1,3-dichloropropene, is possible, and also it has the disintegration of organic compounds, such as disassembly of coloring matter, such as azo dye, methyl mercaptan, captans, Indore, and skatole.
[0012] disintegration nitrogen's of inorganic compound reduction: -- the anaerobiosis contained in OME, and a denominator -- an anaerobic chemosynthesis heterotroph has anaerobic respiration or one of the structure of fermentation. Anaerobic respiration is as essentially as aerobic metabolism (aerobic respiration) the same biochemistry path, and is a nitric acid (NO3-), a sulfuric acid (SO42-), a fumaric acid, or trimethylamine oxide instead of the last electron acceptor of an electron transport chain being oxygen. In NO3- and SO42-, it works as the reduction product last electron acceptor. The typical bacteria with the denitrification ability in OM and OME which NO3- turns into NO2-, and is returned further, is set to N2O, and finally produces N2 gas with denitrifying bacteria in the case of reduction of NO3- are Rhodobacter, Bacillus, Cytophaga, etc.
[0013] Ammonia serves as no odor by the following reaction in the disassembly OM and OME of ammonia.
2NH3+H2 O+CO2 ->(NH4) 2CO32(NH4OH)+H2 O+CO2 -> (NH4) also in 2CO3+2H2O aqueous ammonia, an ammonium carbonate is presented, and when there is little supply of oxygen, ammonium ion (NH4-) changes with digestive bacteria etc. from a nitrous acid to a nitric acid, and serves as no odor.
2NH3+2O2 ->2 NHO+H2O2NHO2+O2 ->2NHO3 [0014] decomposition 2CH3SH+O2->2CH3OH+S2CH3OH+2O of decomposition 2H2 S+O2 ->2NHO2+H2O methyl mercaptan (CH3SH) of a hydrogen sulfide (H2S) -- it turned out that it is possible to remove substantially the sodium chloride in 2 ->2CO2+H2O lixiviation seawater. OME can be applied over all pH range and has the operation which returns pH to neutrality. OME is harmless.
[0015] It is thought that such effectiveness is done so for the interaction of various enzymes including the carbon dialytic ferment which exists in OME, or a microorganism decomposing target dirt, and exfoliating. Therefore, the dirt which the active ingredient in OME was considered that the surface activity effectiveness is acquired when a processed material decomposes, and disassembled is easily removable to the dirt which it is going to remove.
[0016] For example, it is possible to use it for pretreatment washing before coating metal plates, such as dirt of the building materials which were impossible for exfoliation, a steel plate, and an aluminum plate, easy [ a gas range a ventilating fan, etc. ] for dirt including a chitin, asphalt, etc., washing of various electronic parts, etc. Furthermore, exfoliation and removal of the rust adhering to the coating metallurgy group front face which adhered firmly etc. were also possible. It was possible to have exfoliated a paint film momentarily from the electronic parts which calcinated water glass and graphite to the surprising thing, and applied the paint film to it especially. After the application approach of this cleaning agent applies or sprays the cleaning agent in this invention on the processed material to which target dirt adhered or is immersed into a cleaning agent in the above-mentioned processed material, just wiping with cloth etc. lightly is enough as it.
[0017] It is thought that such effectiveness is done so for the interaction of various enzymes including the carbon dialytic ferment which exists in OME, or a microorganism decomposing target dirt, and exfoliating, and the conventional solvent and a surfactant are decomposition by completely different device.
[0018] The second mode of this invention is related with a DCP cleaning agent. The manufacture approach of **, the description, etc. are indicated at the detail by the international patent application PCT/JP 99/No. 02346 specification for which the applicant for this patent applied like [ DCP used in the DCP cleaning agent of this invention ] the first mode (un-opening [ filing-date-of-application May 6, 1999, ] to the public). DCP also has the same operation as OME. Although the OME active ingredient which has such an outstanding property is introduced into carbonaceous and it is referred to as DCP while making the carbonaceous made detailed in OME in this invention immersed and dissolving carbonaceous With in this case, the carbonaceous which is used, which is carried out and which was made detailed The impalpable powder of graphite system carbon and amorphous carbon is meant, generally it is low temperature, and a carbon source is preferably burned and acquired at low temperature about 400 degrees C or less, and the source will not be limited if the purpose of this invention is attained.
[0019] the vegetable system carbon which originates in the vegetation containing cellulose system carbon, such as wood quality, its debris (saw dust), and plants, and a carbohydrate etc. as a carbon source of DCP, the protein system carbon originating in the animals and plants containing protein, and the petroleum system carbon which uses petroleum as a raw material are mentioned, and independent in these carbon -- or it can be combined and used. It is desirable especially to use the carbon of these various origins discarded as the so-called kitchen garbage. In mixing and stirring the carbonaceous and OME (or the diluent) which were made [ above-mentioned ] detailed, the rate of the above-mentioned carbonaceous and an OME diluent is not limited especially unless the purpose and effectiveness of this invention are spoiled. Moreover, a mixed means may also introduce a microorganism water solution into carbonaceous, or may introduce carbonaceous into a microorganism water solution. Preferably, carbonaceous is gradually introduced under stirring into an OME water solution. thus, if the carbonaceous made detailed and the water solution of a microbial group are mixed and stirred, carbonaceous will decompose gradually, if it holds about one to four weeks under stirring, carbonaceous will serve as support of the shape of the shape of a

cake which boiled muddily and was solved, and a sludge, and the load of stirring will become slight. In addition, [0020] which can also add a desired moisture content after making it dry by sunlight or the air dried for example although the moisture of this shape of a cake and sludge-like support can be adjusted and it can also be used as it is DCP can be mixed, the conventionally well-known cleaning agent or remover, for example, the cleanser generally marketed, of remaining as it is or others etc., and can be used as a solid cleaning agent. Or it is also possible to use DCP by making it the shape of a slurry, mixing with water or an aquosity medium. It may be water which is used in that case, and you may be the aquosity medium by which the component which does not check the effectiveness of DCP is contained. The solution which contains the above-mentioned OME solution or various microorganisms preferably for example, (a) aerobic-bacteria group indicated by the international application by the above-mentioned this invention person -- (b) Basidiomycetes belonging to the department of an oyster mushroom of anaerobic microbial population and (c) at least1 kind lives together. And it is microorganism ****** (: ORIENT Green, Inc. which calls it OM the name of dash friend non MK 1 sale) characterized by including the enzyme of these metabolite origins, and the slurry diluted with the cleaning agent including especially the above OME is desirable. Let the addition of the water in this case be the to come, to be suitably chosen by class of dirt and according to this invention DCP cleaning agent which should be processed.
[0021] When this DCP cleaning agent was applied to griddles, such as a frying pan to which rust adhered, and the plates (a metal plate, wood, etc.) to which the coating adhered and was lightly wiped by sponge etc., it found out that took in an instant and these dirt exfoliated. Moreover, it was possible to have exfoliated a paint film momentarily only by [ wiping ] applying the cleaning agent which was mixed with the OME cleaning agent and slurred the DCP powder cleaning agent to the electronic parts which calcinated water glass and graphite and applied the paint film like the OME cleaning agent, and coming to them by sponge, cloth, etc.
[0022] It is thought that a DCP cleaning agent takes effect for the interaction of various enzymes including the carbon dialytic ferment which exists in OME, or a microorganism decomposing target dirt, and exfoliating, and it is based on decomposition by completely different device from the conventional solvent or a surfactant. Moreover, it also has scouring by DCP of the carbonaceous condition made detailed like cleanser etc. The DC itself is elasticity in comparison and it does not damage a washing side.
[0023]
[Effect of the Invention] This invention does so the effectiveness which was excellent in the degree as explained above. If this OME cleaning agent or a DCP cleaning agent is used, it is [ no ] usable in the pH range, and it can apply to the processed material set as various kinds of objects, and generating of harmful matter will be seen, but the surface activity and cleaning agent with which exfoliating simply in use can wash even difficult impossible dirt to a cleaning agent conventionally will be obtained.

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[Translation done.]